Crick

Dear Francis:

I saw Laskowski and Kornberg last week, and they were discussing a suggestion by Dounce on anaother parameter in DNA structure-- I wonder what you think of it, and whether it may bear on "paragenetic resonance". This is based on the possibility of rotation around the N-ribosidic linkage, so that the complementary nucleins might meet in a plane either above or below the C_1 of the deoxyribose. Laskowski said it works in a short model; neither of us had a long one.

Presumably, barring steric hindrance, there would be frequent reversals of orientation at each nucleotide level-- which would mean that (unless one state were very much preferred) it would be rare to find any string in one specific state. As far as hereditary transmission is concerned (if from a one strand state) this can add no new information to the string. However, if there were any way of stabilizing a given orientation, either by the effect of a strand of say protein, or by internucleotide interactions down the axis, it might add another variable in the actual state of DNA that comes under what you called paragenetic resonance. When geneticists talk to embryologists they would like to have some suggestions about modffications of genic activity other than changes in base sequence (e.g. in phase variation in Salmonella).

Say hello to Seymour and George and Sydney and the rest of your army of cryptographers. How's the decoding of T2 coming on?

As ever,

Joshua Lederberg

PS: What are your summer plans? Esther and I will be travelling Royaumont-Stockholm-...Montreal and can hardly avoid London. Any chance of seeing you?